HIT Standards Committee - Implementation Workgroup
Hearing on Implementation Starter Kit: Lessons & Resources to Accelerate Adoption

March 8, 2010 Innovation Panel: Healthcare for the Homeless - Houston

Executive Summary

Healthcare for the Homeless – Houston is a Federally Qualified Health Center in Houston, Texas that serves the homeless through several clinics. We are currently using 2 EMR products, 1 is a commercially available EMR software and the other is home grown. We implemented the commercial EMR in our clinics in 1999 but had to design our own software for our outreach efforts including street outreach and Jail In-Reach. Jail In-Reach provides continuity of care from the jail to our clinics and reduces re-admission rates to the jail by 55%. Medical street outreach differs significantly from standard office and hospital practice. We at Healthcare for the Homeless – Houston developed an EMR through an iterative design process involving an informaticist, primary care physician and several programmers, as well as a team of clinicians who have provided feedback at every phase of the project. Deployment of this system in Boston, Pittsburgh, and Africa is underway.

There are a myriad of barriers to engaging the underserved in effective care. We developed a model of care to help orient the clinical team to the patient's goals and begin the interaction by focusing on the agenda presented by the patient. This method is called Goal Negotiated Care (GNC). The GNC model was conceptualized and operationalized into a program for handheld computers. The ultimate benefits of the technology were the ability to track and follow up on goals negotiated with each patient, as well as the capability to share information among clinicians.

The goals of meaningful use fail to identify the major barriers to care for the most vulnerable of the underserved--the homeless. Ideal solutions may not apply to this task-oriented formula and may ignore entire domains critical to improving health outcomes and continuity of care. Comprehensive care with this population is essential and that includes care from emergency centers, to hospitals, to jails to clinics to street outreach. We are either capable of or have already achieved "meaningful use" in 15 or the 25 categories identified recently.

GNC is an improved model of patient-centered care that enhances patient engagement and continuity-of-care. The current implementation is designed for the homeless and uses custom-designed software for Tablet Personal Computers (TPCs). In addition, this lightweight electronic medical record (EMR) has the potential to be used with other populations who have a need for episodic care with limited long term follow-up, such as those in emergency situations and disasters.

Some of the requirements or standards that helped or hindered innovation largely related to being an FQHC or working with an underserved population:

1. Customized QA reports, populated UDS requirements (without collecting certain data, our grant monies would have been reduced)
2. Consumer Advisory Board was helpful in designing record
3. Critical need for overcoming legal barriers to sharing records and record systems
4. Ideally, we would use the same record as Harris County's indigent care system but not possible due to County and State regulations. When there was the "will" to extend the record, a legal consultant was identified from the BPHC that confirmed this was not appropriate. Barrier: Whoever owns the record must assume all responsibility for the patient and be the "health home". Problem: Primary source of

care for the homeless: EMERGENCY ROOMS. County attorneys said Texas confidentiality is more strict than HIPAA.

Some of the tools, techniques and approaches key to fostering innovation:

1. An EMR mirroring the flow of care consistent with patient centered medical home: Goal Negotiated Care used to organize workflow and focus on unique needs of street homeless population
2. Being closely associated with a larger system was probably the greatest factor in securing software: EMR, hardware and IT support. If funding could include the "host institutions" it would encourage collaboration
3. Had stakeholder meetings that identified challenges and resources from the onset
4. EMR/Systems must be mapped to the workflow of the clinician to encourage adoption .
5. Web based cloud solution enabling quick and efficient access to data
6. Customized dashboards in the system enable Clinicians to view data easily through graphic visualizations. This helps clinicians to stay informed and helps in analyzing key performance indicators.
7. System must be able to address the workflow of the organization e.g. UDS. If the organization can see that the reporting needs are easier to collect, then the organizational culture will increase the pressure for system use and move toward 'meaningful use'.
8. Clearly focusing the work flow on what needs to be done, rather than on what would be nice to do, simplifies both the workflow and the screen (interface) design. However, it must be remembered that this is iterative and the more a system is used, the more the interface will expand, incorporating new elements as needed.
9. Human Factor/Cognitive Engineering factors are necessary to improve 'ease of use', which must support the workflow. (you can have wonderful screen designs that don't get your work done – you need both – parallel/matched)
10. Clinical users are the key. (if you don't get buy-in from the clinicians, it is not going to happen). (individualized/customizable dashboards helps create more clinician buy-in)
11. Increasingly patients should be able to access the stored data, which requires a new set of workflows.
12. Security is not a single criterion, but is situational. Having data that is open but cannot be accessed, particularly on the street, is not security. Rethink security – just putting up walls is not enough. If you need data on a patient but can't get it that is not security. Lack of patient data does not help. Right data at the right time for the appropriate clinician is the goal. VPN use frequently hindered access to data until we became web-based.
13. Systems are increasingly dependent on connectivity. Support for disconnected environments with the latest technologies in Silverlight programming called out-of-browser environment. We did not want to use database replication again because of lessons learned from our previous of product development. Replication causes a very high chance of data inconsistencies and corruption. So we have designed a one-way data-flow model that sends records (created during disconnected environments) when connected. A strong algorithm handles possibilities of data duplication during such disconnected environments enabling merging of such records seamlessly.
14. When other information systems are used by multiple programs, merging and HIE integration becomes important.
15. Goal negotiated care workflow in StreetEMR concludes with automated task generation for both clinicians and patients, enabling efficient follow-up of "things to do" by each individual. These tasks can be checked off from a clinician's list thus enabling better accountability and efficient recordkeeping.
16. StreetEMR database and application is designed to have a de-identified research interface for data and information mining.

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I. Objective: EMR for the homeless in clinical and street environment

II. Background/Context

A. Now:

i. Organization: Healthcare for the Homeless-Houston
ii. Location: Houston, TX
iii. Budget 2010: $2.6 million
iv. Funding sources: 45% government (25% FQHC), 45% local foundations, 10% individual/corporate; <<1% Medicaid/Medicare ($1200) therefore meaningful use incentive not a factor currently
v. 1 FQHC with 2 locations
vi. Service Provided: primary care; 4 types of integrated behavioral health; street outreach – developed the first EMR for street outreach; and The Jail In Reach Project, an intensive case management program for mentally ill homeless who are incarcerated. Evaluation has shown that for those who had engaged and linked to services through the Jail In Reach Project had reduced their average number of bookings into the jail by 56.43% compared to the year prior to engaging in the program and reduced their average length of stay in the jail by 42.11% compared to the year prior to their engagement in the program.

B. Background:

The most common provider of health care services to the homeless are emergency centers (EC's), and the homeless typically go from clinic to clinic, with no common location for care. Thus the Electronic Medical Record (EMR) could serve as the virtual "health home" linking the different sites of care.

Another major problem was an inadequate paper record system at the non-profit, non-governmental clinics staffed predominantly by volunteers. Problem lists often could not be found and the chronic, underlying complex conditions were seldom identified. The most common reason for visits before EMR's were implemented were upper respiratory illnesses, hypertension, skin problems and pain. After implementation of EMR's, the top four diagnoses included more complex diagnoses. In addition to hypertension and diabetes, serious mental illness, substance abuse were identified among the top four diagnoses.

We hoped to tie-in to our County hospital EC's and make our record accessible to staff credentialed in both systems, but the barrier was insurmountable: Two separate medical records (theirs was paper). It remains insurmountable, despite two EMR's.

In 1999, HHH had two clinic sites, at which time, we implemented an EMR for the 2 clinical environments with a commercial product: Logician. In 2002 we developed our own software for street medicine. What follows are some of the lessons from those experiences.

III. Challenges: Initial

A. Clinical Environment

i. 1999-No organization in the County had implemented a multi-site, single record EMR
ii. No funding identified
iii. No IT infrastructure
iv. No IT support

IV. Successes: Initial

A. Clinical Environment

i. In 1999, the first EMR between multiple clinics; capacity to access at indigent hospital's EC
ii. Medical schools and hospitals helped secure software gratis
iii. Medical school consortium agreed to target hardware infrastructure in Telecommunications Informatics Fund; NLM grant also obtained
iv. COMPAQ provided a grant for the hardware
v. Health IT group (HealthLink) donated their time for training staff and programming
vi. Medical students trained on EMR and ultimately was similar to the commercial EMR chosen by one of the institutions
vii. EMR was utilized from the onset: Logician-Internet, then server based, then GE Centricity (all gratis!)
viii. New hardware funded by grants

V. Challenges: Secondary

A. Clinical Environment

i. Customization needed for reports for BPHC:FQHC
ii. Customization needed for QA reports but programming is costly
iii. Our host institutional support (medical school) decreased-due to downsizing there was less infrastructure to support our clinics
iv. Need for telepsychiatry (videoconferencing)
v. No exchange of health information
vi. If County underserved care extended their EMR for our use, we could share common patient records but would no longer technically meet the meaningful use criteria for exchanging health information. This ironically would be a disincentive for the County to extend their EMR to smaller programs. Although would be a better solution to have a common record (rather than shared record) it would not have the incentive because the extended EMR would then be only one system and therefore not an exchange. We have a limited need for any other health information exchange from other programs.
vii. To share patient information, institutions need the legal ability to enable extension of their EMR to smaller clinics (e.g- FQHC's) rather than require each of the smaller clinics to host their own separate EMR, inherently limiting health information exchange.

viii. Instead of providing legal protection to grant patient information exchange civil and criminal penalties have been increased.

B. Street medicine

i. Flow of care for homeless different than for whom most populations EMR designed
ii. To result in truly meaningful use clinical processes and workflows must be supported by the technology.
iii. Predominance of psychosocial issues and behavioral health problems are often not supported by conventional EMRs that adhere to the biomedical model
iv. Unusual nature of work and work force of street medicine make the usability and workflow of a commercial EMR more of a barrier to improving outcomes
v. Customization needed for reports for BPHC: FQHC
vi. Dwindling institutional support to provide service but street records kept off-site and resources/capacity contracted with little knowledge of Tablet PCs

VI. Successes: Secondary

A. Clinical Environment

i. Some programming for customization obtained through grants for FQHCs on a pro bono basis
ii. Videoconferencing enables for 24x7 access to psychiatric services allowing for care when convenient to the patient (making return visits just to see the psychiatrist unnecessary). Our county has capacity for less than 10% of psychiatric need
iii. EMR is used in almost all indigent health care clinics but seldom fully utilized to share health information

B. Street medicine

i. No existing EMR for street outreach and other outreach efforts like the Jail In Reach Project so we designed out own record
ii. Customized QA reports, populated UDS requirements (without the EMR generating reports our own grant monies would have been reduced)
iii. Spent our own capital, identified volunteers, students in initial phase, then started separate non-profit
iv. Designed record that mirrored flow of care consistent with patient centered medical home: Goal Negotiated Care used to organize workflow and focus on unique needs of street homeless population
v. Consumer Advisory Board was helpful in designing record
vi. Expansion to Boston, Pittsburgh, and Africa underway

VII. Implementation advice, roadmaps—Key elements in success: host institution largess with

A. Being closely associated with a larger system was probably the greatest factor in securing software: EMR, hardware and IT support
B. Had stakeholder meetings that identified challenges and resources from the onset

VIII. How federal entities can be helpful in meeting the array of meaningful use criteria: quality goals, consumer engagement and standards implementation

A. Critical need for overcoming legal barriers to sharing records and record systems
B. The ideal would be to be on the same record as County indigent system but not possible due to County and State regulations. When there was the "will" to extend the record a legal consultant was identified from the BPHC that conformed this was not appropriate. Barrier: Who owns the record must assume all the responsibility for the patient and be the "health home". Problem: Primary source of care for the homeless: EMERGENCY ROOMS. County attorneys said Texas confidentiality is more strict than HIPAA.
C. Largess - funding to encourage larger institutions to host small clinics to not be a drain on their resources
D. FQHC's and indigent care clinics need centralized local repository for sharing software, customized reports that only the larger clinics are afforded

The goals of meaningful use fail to identify the major barriers to care for the most vulnerable of the underserved: the homeless. Ideal solutions may not adhere to this task-oriented formula and ignore entire domains critical to improving health outcomes and continuity of care. Comprehensive care with this population is essential and that includes care from emergency centers, to hospitals, to jails to clinics to street outreach.
Meaningful use is clearly a moving target. Meaningful use was achieved or there is capacity for Meaningful Use for the following:

1. Maintain a problem list, active diagnoses
2. Generate or transmit prescriptions
3. Maintain active medication list
4. Maintain active medication allergy list
5. Record demographics
6. Record and chart changes in vital signs
7. Record smoking status
8. Generate lists of patients by specific conditions for improvement and research
9. Provide patients with an electronic copy of their health information
10. Provide patients with timely electronic access to their health information
11. Provide clinical summaries to patients for each office visit
12. Capability to exchange key clinical information among providers electronically
13. Provide summary of care record for each transition of care and referral
14. Provide electronic syndromic surveillance data to public health agencies
15. Protect electronic health information maintained using certified EHR technology

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David S Buck, MD, MPH; Healthcare for the Homeless – Houston; Baylor College of Medicine; 3/8/10

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4. The ideal would be to be on the same record as County indigent system but not possible due to County and State regulations. When there was the "will" to extend the record a legal consultant was identified from the BPHC that confirmed the different underserved health care providers could not share one record despite overlapping patient population. It was stated that the barrier was EMR ownership. Who owns the record must assume all the responsibility for the patient and be the "health home". This does not match the experience that the primary source of care for the homeless is emergency rooms. County attorneys said Texas confidentiality is more strict than HIPAA and thus integrating a record is unlikely.

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